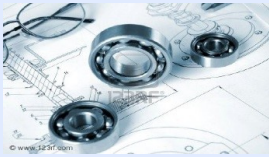


Baltimore County has a robust Manufacturing industry, providing the resources necessary to support more than 500 small, mid-sized and large employers. The diversity of manufacturers who call the County home helps sustain the industry during economic fluctuations. Technological innovations allow manufacturers to achieve high levels of precision and productivity, creating both significant shifts in the skills required of today's manufacturing workforce and opportunities for growth and advancement to meet future demand in this rapidly evolving industry.

## The Manufacturing industry relies heavily upon occupations related to:



Production Process Development



Production & Quality Assurance



Maintenance, Installation & Repair

## Manufacturing Related Support Service Occupations include:

Office, Administrative & Clerical Support

Sales & Customer Service

Material Moving, Warehousing & Distribution

## MANUFACTURING CAREER CLUSTERS

This section provides examples of the entry- and middle-skilled Manufacturing and related occupations in highest demand among Baltimore County employers, based on 2016 employment data, wages, and projected job growth. The data are categorized by "Manufacturing Career Clusters" – groups of Manufacturing occupations in the same field of work that require similar skills – which can be used to help focus education plans towards obtaining the necessary knowledge, competencies, and training for success in one of many Manufacturing career options.

### Manufacturing Occupations At-A-Glance

- Cluster with the most significant demand: **Production**
- Related occupations across Industry Career Clusters: **TDL - Material Moving, Warehousing & Distribution Trades**

### Production, Process Development & Quality Assurance

- Employment in the Manufacturing Cluster is highly concentrated in Production occupations, which accounts for **41% of employment**.
- Occupational demand in the cluster is highly concentrated in entry-skilled, lower wage occupations, which account for **68% of employment**.
- Transportation and material moving occupations such as Laborers & Freight, Stock, and Material Movers, Hand account for **9% of employment**.

Entry-Skilled	Mid-Skilled	High-Skilled
Packaging and Filling Machine Operators & Tenders Inspectors, Testers, Sorters, Samplers & Weighers	Machinists Welders, Cutters, Solderers & Brazers First Line Supervisors of Production & Operating Workers	Purchasing Agents Mechanical & Industrial Engineers Production, Planning & Expediting Clerks

### Maintenance, Installation & Repair

- Entry-level positions leading to careers in this cluster often start with occupations such as **General Maintenance and Repair Workers**.
- High-demand occupations in this cluster include: **Industrial Machinery Mechanics** and **Heating, Air Conditioning & Refrigeration Mechanics**.
- Maintenance workers can progress into more highly-skilled management positions such as **First Line Supervisors of Mechanics, Installers & Repairers** through occupationally specific credentials coupled with on-the-job experience.

### Support Service Occupations

Support Service Occupations (SSOs) are jobs that can be found across all industry sectors that are critical to the daily operation, administration and management of the business. The Manufacturing industry shares many of the same key SSO's found in the Transportation, Distribution & Logistics industry such as: **Office, Administrative & Clerical Support; Sales & Customer Service**. Office and Administrative Support occupations account for **11% of employment**, creating entry-points to any of the career clusters listed above, depending upon one's interests, skills and abilities.

With more than 500 manufacturing companies and nearly 15,000 workers in Baltimore County, it is critical to develop a skilled talent pipeline with the advanced technological skills that are in greatest demand. Here are a few middle-skilled occupations with projected high growth that...

## KEEP THAT PRODUCTION LINE ROLLING!

### HIGH-DEMAND MIDDLE-SKILLED OCCUPATIONS

Production Process Development,  
Production & Quality Assurance

#### Education & Skills:

Upon Entry: Less than HS / HS Diploma or Equivalent / Post-Secondary Certificate / Some College, No Degree / Associates  
Advancement: Industry-recognized credentials from vocational training, apprenticeship, moderate-or long-term OJT and work experience / Bachelors

#### Production Process Development

**Electrical & Electronic Engineering Technicians (17-3023)**

2016 Est. Emp.: 630 / Mean Wage: \$31.22

**Mechanical Drafters (17-3013)**

2016 Est. Emp.: 250 / Mean Wage: \$28.42

**Electrical & Electronics Drafters (17-3012)**

2016 Est. Emp.: 80 / Mean Wage: \$26.28

#### Quality Assurance

**Production, Planning & Expediting Clerks (43-5061)**

2016 Est. Emp.: 610 / Mean Wage: \$23.99

**Weighers, Measurers, Checkers & Samplers, Recordkeeping (43-5111)**

2016 Est. Emp.: 170 / Mean Wage: \$16.76

**Inspectors, Testers, Sorters, Samplers & Weighers (51-9061)**

2016 Est. Emp.: No BCO Data / Mean Wage: \$21.68

#### Production

**First-Line Supervisors of Production & Operating Workers (51-1011)**

2016 Est. Emp.: 1,040 / Mean Wage: \$30.24

**Machinists (51-4041)**

2016 Est. Emp.: 690 / Mean Wage: \$23.74

**Welders, Cutters, Solderers & Brazers (51-4121)**

2016 Est. Emp.: 390 / Mean Wage: \$20.85

**Electrical & Electronic Equipment Assemblers (51-2022)**

2016 Est. Emp.: 320 / Mean Wage: \$18.37

**Printing Press Operators (51-5112)**

2016 Est. Emp.: 270 / Mean Wage: \$20.01

**Mixing & Blending Machine Setters, Operators & Tenders (51-9023)**

2016 Est. Emp.: 230 / Mean Wage: \$17.50

**Dental Laboratory Technicians, All Other (51-9081)**

2016 Est. Emp.: 170 / Mean Wage: \$20.39

**Computer-Controlled Machine Tool Operators, Metal & Plastic (51-4011)**

2016 Est. Emp.: 150 / Mean Wage: \$22.26

### Maintenance, Installation & Repair

#### Education & Skills:

Upon Entry: HS Diploma or Equivalent / Associates / Post-Secondary Certificate  
Advancement: Industry-recognized credentials from vocational training, apprenticeship, short- or moderate-term OJT and work experience

**Maintenance & Repair Workers, General (49-9043)**

2016 Est. Emp.: 3,300 / Mean Wage: \$19.04

**First-Line Supervisors of Mechanics, Installers & Repairers (49-1011)**

2016 Est. Emp.: 1,400 / Mean Wage: \$31.73

**Industrial Machinery Mechanics (49-9021)**

2016 Est. Emp.: 700 / Mean Wage: \$24.42

**Telecommunications Line Installers & Repairers (49-9052)**

2016 Est. Emp.: 610 / Mean Wage: \$27.80

**Heating, Air Conditioning & Refrigeration Mechanics (49-9021)**

2016 Est. Emp.: 530 / Mean Wage: \$28.46

**Installation, Maintenance & Repair Workers, All Other (49-9099)**

2016 Est. Emp.: 520 / Mean Wage: \$20.28

**Electrical & Electronics Repairers, Commercial & Industrial Equipment (49-2094)**

2016 Est. Emp.: 160 / Mean Wage: \$30.34

**Maintenance Workers, Machinery (49-9043)**

2016 Est. Emp.: 90 / Mean Wage: \$21.29

### Support Service Occupations

Support Service Occupations (SSOs) are jobs that can be found across all industry sectors that are critical to the daily operation, administration and management of the business. The Manufacturing industry shares many of the same key SSO's found in the Transportation, Distribution and Logistics (TDL) industry such as: **Office, Administrative & Clerical Support**. Office and Administrative Support occupations account for **11% of employment**, creating entry-points to any of the career clusters listed above, depending upon one's interests, skills and abilities.

**Office and Administrative Support Workers, All Other (43-9199)**

2016 Est. Emp.: 520 / Mean Wage: \$19.23

**Customer Service Representatives (43-4051)**

2016 Est. Emp.: 8,350 / Mean Wage: \$17.63

**Billing and Posting Clerks (43-3021)**

2016 Est. Emp.: 1,500 / Mean Wage: \$19.18

**Shipping, Receiving and Traffic Clerks (43-5071)**

2016 Est. Emp.: 1,550 / Mean Wage: \$15.22

(See the TDL Occupational Profile for a complete list of related Support Service Occupations)



# IN-DEMAND OCCUPATIONS

# Manufacturing

Occupations within the Manufacturing Career Clusters have a wide range of minimum educational requirements:

## Maintenance, Installation & Repair

Most Maintenance, Installation & Repair occupations require a HS diploma/equivalent and post-secondary certificate, or industry-recognized credentials through short- or moderate-term OJT/apprenticeships.

**Maintenance & Repair Workers, General (49-9071)**  
2016 Est. Emp.: 3,330 / Mean Wage: \$19.04

**First Line Supervisors of Mechanics, Installers & Repairers (49-1011)**  
2016 Est. Emp.: 1,400 / Mean Wage: \$31.73

**Industrial Machinery Mechanics (49-9041)**  
2016 Est. Emp.: 700 / Mean Wage: \$24.42

**Telecommunications Line Installers & Repairers (49-9052)**  
2016 Est. Emp.: 610 / Mean Wage: \$27.80

**Heating, Air Conditioning & Refrigeration Mechanics & Installers (49-9021)**  
2016 Est. Emp.: 530 / Mean Wage: \$28.46

**Installation, Maintenance & Repair Workers, All Other (49-9099)**  
2016 Est. Emp.: 520 / Mean Wage: \$20.28

**Computer, Automated Teller & Office Machine Repairers (49-2011)**  
2016 Est. Emp.: 430 / Mean Wage: \$19.36

**Security & Fire Alarm Systems Installers (49-2098)**  
2016 Est. Emp.: 330 / Mean Wage: \$24.88

**Locksmiths & Safe Repairers (49-9094)**  
2016 Est. Emp.: 200 / Mean Wage: \$21.42

**Electrical & Electronics Installers & Repairers, Commercial & Industrial Equipment (49-2094)**  
2016 Est. Emp.: 160 / Mean Wage: \$30.34

**Aircraft Mechanics & Service Technicians (49-3011)**  
2016 Est. Emp.: 100 / Mean Wage: \$30.35

**Maintenance Workers, Machinery (49-9043)**  
2016 Est. Emp.: 90 / Mean Wage: \$21.29

**Outdoor Power Equipment & Other Small Engine Mechanics (49-3053)**  
2016 Est. Emp.: 80 / Mean Wage: \$18.98

## Quality Assurance

Advanced occupations within the Quality Assurance and Process Development clusters may require an Associates, Bachelor's or Master's Degree.

**Industrial Production Managers (11-3051)**  
2016 Est. Emp.: 240 / Mean Wage: \$57.26

**Production, Planning, and Expediting Clerks (43-5061)**  
2016 Est. Emp.: 610 / Mean Wage: \$23.99

**Weighers, Measurers, Checkers, and Samplers, Recordkeeping (43-5111)**  
2016 Est. Emp.: 170 / Mean Wage: \$16.76

**Inspectors, Testers, Sorters, Samplers & Weighers (51-9061)**  
2016 Est. Emp.: No BCO Data / Mean Wage: \$21.68

## Support Service Occupations:

(See the TDL In-Demand Occupations for more)

**Shipping, Receiving and Traffic Clerks (43-5071) \***  
2016 Est. Emp.: 1,550 / Mean Wage: \$15.22

**Billing and Posting Clerks (43-3021)**  
2016 Est. Emp.: 1,500 / Mean Wage: \$19.18

## Production

Most mid-skilled Production and Production Process Development occupations require workers have a High School Diploma/Equivalent, advancing to receive a Post-Secondary Certificate or subsequent industry-recognized credentials.

**First-Line Supervisors of Production & Operating Workers (51-1011)**  
2016 Est. Emp.: 1,040 / Mean Wage: \$30.24

**Packaging/Filling Machine Operators & Tenders (51-9111) \***  
2016 Est. Emp.: 780 / Mean Wage: \$14.17

**Machinists (51-4041)**  
2016 Est. Emp.: 690 / Mean Wage: \$23.74

**Production Workers, All Other (51-9199)**  
2016 Est. Emp.: 490 / Mean Wage: \$16.48

**Bakers (51-3011) \***  
2016 Est. Emp.: 480 / Mean Wage: \$14.57

**Helpers – Production Workers (51-9198) \***  
2016 Est. Emp.: 420 / Mean Wage: \$14.93

**Welders, Cutters, Solderers & Brazers (51-4121)**  
2016 Est. Emp.: 390 / Mean Wage: \$20.85

**Team Assemblers (51-2092) \***  
2016 Est. Emp.: 370 / Mean Wage: \$13.80

**Electrical & Electronic Equipment Assemblers (51-2022)**  
2016 Est. Emp.: 320 / Mean Wage: \$18.37

**Butchers & Meat Cutters (51-3021)**  
2016 Est. Emp.: 320 / Mean Wage: \$19.41

**Print Binding & Finishing Workers (51-5113) \***  
2016 Est. Emp.: 290 / Mean Wage: \$15.45

**Printing Press Operators (51-5112)**  
2016 Est. Emp.: 270 / Mean Wage: \$20.01

**Assemblers & Fabricators, All Other (51-2099) \***  
2016 Est. Emp.: 250 / Mean Wage: \$15.73

**Mixing & Blending Machine Setters, Operators & Tenders (51-9023)**  
2016 Est. Emp.: 230 / Mean Wage: \$17.50

**Dental Laboratory Technicians (51-9081)**  
2016 Est. Emp.: 170 / Mean Wage: \$20.39

**Painters, Transportation Equipment (51-9122)**  
2016 Est. Emp.: 160 / Mean Wage: \$26.95

**Computer-Controlled Machine Tool Operators, Metal & Plastic (51-4011)**  
2016 Est. Emp.: 150 / Mean Wage: \$22.26

**Computer Numerically Controlled Machine Tool Programmers, Metal & Plastic (51-4012)**  
2016 Est. Emp.: No BCO Data / Mean Wage: \$20.59

**Metal Workers & Plastic Workers, All Other (51-4199)**  
2016 Est. Emp.: 150 / Mean Wage: \$20.29

**Separating, Filtering, Clarifying, Precipitating, & Still Machine Setters, Operators & Tenders (51-9012)**  
2016 Est. Emp.: 110 / Mean Wage: \$19.16

**Structural Metal Fabricators and Fitters (51-2041)**  
2016 Est. Emp.: 80 / Mean Wage: \$17.44

**Cutting, Punching & Press Machine Setters, Operators & Tenders, Metal and Plastic (51-4031)**  
2016 Est. Emp.: 80 / Mean Wage: \$20.58

**Paper Goods Machine Setters, Operators & Tenders (51-9196)**  
2016 Est. Emp.: 80 / Mean Wage: \$17.50

**Extruding & Drawing Machine Setters, Operators & Tenders, Metal & Plastic (51-4021)**  
2016 Est. Emp.: 70 / Mean Wage: \$16.39

**Stationary Engineers and Boiler Operators (51-8021)**  
2016 Est. Emp.: 70 / Mean Wage: \$30.09

**Crushing, Grinding & Polishing Machine Setters, Operators & Tenders (51-9021) \***  
2016 Est. Emp.: 70 / Mean Wage: \$15.45

**Electromechanical Equipment Assemblers (51-2023)**  
2016 Est. Emp.: 60 / Mean Wage: \$19.11

**Multiple Machine Tool Setters, Operators & Tenders, Metal & Plastic (51-4081) \***  
2016 Est. Emp.: 60 / Mean Wage: \$15.79

**Tool and Die Makers (51-4111)**  
2016 Est. Emp.: 40 / Mean Wage: \$22.74

**Molding, Coremaking & Casting Machine Setters, Operators & Tenders, Metal & Plastic (51-4072)**  
2016 Est. Emp.: 30 / Mean Wage: \$16.76

**Woodworking Machine Setters, Operators & Tenders, Except Sawing (51-7042)**  
2016 Est. Emp.: 30 / Mean Wage: \$17.11

**Grinding and Polishing Workers, Hand (51-9022)**  
2016 Est. Emp.: 30 / Mean Wage: \$18.84

## Production Process Development

**Purchasing Agents, Except Wholesale, Retail & Farm Products (17-3019)**  
2016 Est. Emp.: 910 / Mean Wage: \$32.33

**Mechanical Engineers (17-2141)**  
2016 Est. Emp.: 680 / Mean Wage: \$37.98

**Electrical Engineers (17-2071)**  
2016 Est. Emp.: 660 / Mean Wage: \$43.70

**Electrical & Electronic Engineering Technicians (17-3023)**  
2016 Est. Emp.: 630 / Mean Wage: \$31.22

**Engineering Technicians, Except Drafters, All Other (17-3029)**  
2016 Est. Emp.: 30 / Mean Wage: \$39.81

**Industrial Engineers (17-2112)**  
2016 Est. Emp.: 250 / Mean Wage: \$44.49

**Mechanical Drafters (17-3013)**  
2016 Est. Emp.: 250 / Mean Wage: \$28.42

**Electronics Engineers, Except Computer (17-2072)**  
2016 Est. Emp.: 80 / Mean Wage: \$41.06

**Electrical & Electronics Drafters (17-3012)**  
2016 Est. Emp.: 80 / Mean Wage: \$26.28

*Manufacturing Career Clusters* were derived from O\*NET Career Clusters and Standard Occupational Classifications (SOC).  
High-demand occupations with wages slightly below the locally determined minimum mean wage are denoted with an asterisk (\*).

